(DIRS 118952-Savage, Svarc, and Prescott 1999, all). After correction for deformation associated with the Little Skull Mountain earthquake, the data continue to indicate a strain rate about an order of magnitude lower than that reported by DIRS 103485-Wernicke et al. (1998, all).

DOE is continuing to fund additional investigations on the crustal strain rate in the Yucca Mountain region through a grant to the University of Nevada. Dr. Wernicke of the California Institute of Technology (Cal Tech) continues to monitor conditions as a principal investigator under a subcontract, and a group at the University of Nevada at Reno is tasked with providing an independent evaluation of the assumptions and processing that support the Cal Tech results. This study involves 32 geodetic monument sites with continuous Global Positioning System measurements, a significant improvement over the study reported in *Science* in 1998. The first report (DIRS 156302-Marks 2001, all) from this effort was issued during 2001 and provided a status based on data collected through May 2001. According to the report, preliminary findings from this ongoing study are that strain is accumulating in the Yucca Mountain region, but at a notably lower rate than previously reported by DIRS 103485-Wernicke et al. (1998, all). Improved results are expected over the next year of the study, including a better characterization and explanation for the strain accumulation. DOE believes the results of this study will confirm the lower crustal strain rates as reported by the U.S. Geological Survey. However, if higher crustal strain rates are shown to exist, DOE will reassess the volcanic and seismic hazard at Yucca Mountain.

#### 3.1.3.4 Mineral and Energy Resources

The southern Great Basin contains valuable or potentially valuable mineral and energy resources, including deposits with past or current production of gold, silver, mercury, base metals, and uranium. The proximity of known deposits and the identification of similar geologic features at Yucca Mountain have led some investigators to propose that the analyzed Yucca Mountain land withdrawal area (see Figure 3-2) could have the potential for mineral resources (DIRS 103483-Weiss, Noble, and Larson 1996, p. 5-26).

DOE site investigations included evaluation of the potential for mineral and energy resources in the analyzed withdrawal area because the presence of such resources could lead to exploration and inadvertent *human intrusion* (see Chapter 5). The *Yucca Mountain Site Description* (DIRS 151945-CRWMS M&O 2000, Section 4.9) describes results of investigations that address relevant natural resources. Site characterization investigators identified no economic deposits of base or precious metals, industrial rocks or minerals, and energy resources, based on present use, extraction technology, and economic value of the resources (DIRS 151945-CRWMS M&O 2000, p. 4.9-12 to 4.9-14). DOE believes the potential for economically useful mineral or energy resources in the analyzed Yucca Mountain withdrawal area is low.

### 3.1.4 HYDROLOGY

This section describes the current hydrologic conditions in the Yucca Mountain region in terms of surface-water and groundwater system characteristics. The region of influence considered for surface water includes construction or land disturbance areas that could be susceptible to erosion, areas affected by permanent changes in surface-water flow, and areas downstream of the proposed repository that could be affected by eroded soil or potential spills of contaminants. The groundwater region of influence includes aquifers that would underlie areas of construction and operation, aquifers that could be sources of water for construction and operations, and aquifers downgradient of the proposed repository that repository use, including long-term releases, could affect. Section 3.1.4.1 describes surface-water conditions, and Section 3.1.4.2 describes groundwater conditions.